



## Got Health?: A Student-Led Inquiry Youth Engagement Project

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### Abstract

**Background:** Schools can serve as a pillar for health promotion for children and youth; youth reporting high levels of school engagement and peer connectedness report improved health and decreased health risk behaviours. Students that have a negative school experience and feel alienated are more likely to engage in health risk behaviours. Thus, developing effective student-led inquiry health initiatives based on empowerment and engagement are important for the health of future generations. We examined a student-led inquiry initiative that was developed and piloted in one school district in British Columbia (BC), Canada called Got Health?. The purpose was to empower students to create change in their schools through developing and leading a school health project guided by the four pillars of the Comprehensive School Health model.

**Methods:** 4 Elementary, 2 Middle, and 2 High Schools in 1 school district were engaged in the 2011-2012 school year. The project received funding from The District Health Promoting Schools and each school was supported by a small grant from the Directorate of Agencies for School Health (DASH) in BC. Each school identified a teacher champion and a team of students to lead the project. Semi-structured focus groups were used to collect qualitative data. A framework analysis approach was used to analyse the data.

**Results:** Mirroring those found in the literature, major outcomes identified by the focus groups include: increased school connectedness, improved health awareness, and facilitation of student engagement.

**Conclusions:** Our results suggest that student-led health promotion projects can make a positive contribution to both student engagement and school connection. Future research should implement more randomized comparison trials that include implementation information and process evaluation to move the field forward.

**Keywords:** Youth engagement; Youth empowerment; School health; Peer-led inquiry

groups and school reports. The purpose of this paper is to provide an overview of the methods and results of the evaluation.

### Background

The health and well-being of children and youth in Canada is declining at such a rate compared to previous generations that some experts believe they will experience worse adult health outcomes than their parents [1]. This belief is based on the rates of mental health difficulties, aggressive behaviour, bullying, obesity, and chronic diseases such as type 2 diabetes, that make up the "new morbidity" among Canadian children and youth [1]. It is also worrisome that only 7% of Canadian youth engage in enough physical activity to achieve health benefits. Rather, Canadian children are spending a large part of each day participating in non-physical activities, such as watching television or spending time on a computer [2].

Considering the health status of Canadian youth, the health promotion [3-10] and student inquiry literature [11-13], a school-based, student-led inquiry initiative was developed. This initiative was piloted in one school district and evaluated through participant focus

### Rationale

Youth spend a large proportion of their time in schools, and although schools have the capacity to be health-promoting environments [14] they may also be the opposite and provide an environment detrimental to health and wellness. In 2013, 37% of students in British Columbia (BC), Canada in grades 7-12 self-reported being teased, 35% socially excluded, and 14% cyberbullied [15]. This was intensified by the fact that 39% of youth 15-19 years old reported feeling pressured to accomplish more than they could handle with most cutting back on sleep to accommodate the demands [16]. Further, when students feel powerless it can increase the risk of disease and poor health outcomes [17]. While students that have a negative school experience and feel alienated from family or school are more likely to engage in health risk behaviours such as cigarette smoking and alcohol misuse [18].

Conversely, youth with a high level of self-reported school engagement reported excellent or very good health and were less likely to report risk behaviours [19] and youth reporting a high level of peer connectedness were also more likely to report excellent or very good health and lower levels of anxiety [20]. Thus, it is clear that schools can and often do serve as a pillar for health promotion for school-aged children and youth [14].

Health promotion is defined as “a process of enabling individuals and communities to increase control over the determinants of health” [21]. This aligns with key literature that suggests providing students with increased control and the opportunity to participate in planning and decision-making in health programming could increase motivation, self-confidence, knowledge and awareness concerning health issues, support social connections, encourage engagement and empowerment, have positive effects on the school environment, and promote healthier lifestyle behaviours in relation to smoking, alcohol consumption, diet and physical activity [9,22-26]. Previous studies found that using peer-led intervention strategies helped increase the physical activity levels of students in their projects [8,27]. Further, the implementation of peer-led programs has been effective for nutrition education, as well as drug prevention [28,29].

One innovative method of engaging and empowering students is through student-led inquiry. Inquiry is an approach where knowledge and understanding are created through a “process of people working and conversing together as they pose and solve problems, make discoveries and rigorously test the discoveries that arise in the course of shared activity” [13]. Learning through inquiry allows students to be creative and develop their knowledge on their own initiative [12]. Beginning with, and sustained by, student curiosity, teachers and students who ask, “What do we need to know?” and “How can we find out?” support the inquiry process. Whether the student is delving into active exploration or gaining compassion for endangered species, the most successful curriculum inquiry projects emerge from topics that are of personal interest to the students [11].

The correlation between school engagement, youth empowerment and youth health is considered to be critically important by the Canadian Association for School Health (CASH) which acknowledges health as a prerequisite for learning [30]. However, many school health initiatives are “adult-centric” and implemented in a top-down fashion: activities selected by adults to address perceived needs without student consultation [9]. In fact, after analysing various models and studies on youth participation, empowerment and health, Wong et al. proposed a continuum spanning from complete adult control to youth engagement without adult guidance. Research shows that the ideal level of collaboration for youth involves a balance of power where youth are given the opportunity to share ideas, build their skills, and be involved in putting their research into action and adults are open-minded, welcoming, and gently guide without controlling [3-7,9,10].

One Canadian example of empowering youth related to physical activity and healthy eating is Healthy Youth Places [8]. This initiative targeted teens in a school-based program encouraging youth to achieve and maintain healthy eating and regular exercise. To our knowledge this approach has not been evaluated extensively in the literature and is mostly limited to the middle school years.

## The present study

A school-based, student-led inquiry initiative titled Got Health? (GH), was developed and piloted in one school district (from here on

“the District”) in BC. The purpose was to empower students to create change in their schools through developing and leading a school health project guided by the four pillars of the Comprehensive School Health (CSH) model: a) healthy school policy, b) partnerships and services, c) social and physical environment and d) teaching and learning [31] which has been adopted in the District and across BC.

One of the core components of CSH is a school health planning team and prior to GH, planning teams in the District rarely included students. As part of GH, teams of students were formed and, with the help of a teacher sponsor, were the driving force of the initiative. Using student inquiry, students were involved in the planning and implementation of GH activities, and were tasked with identifying a question about health that guided their activities reflecting upon their learning related to this question. The students were given the opportunity to help shape their inquiry question, develop a plan of action, collect and analyze data, and reflect upon their experience.

To prepare students for their inquiry projects, training was provided that included education on the four pillars of CSH and students sharing their experiences related to each pillar (positive or negative). Each team received support from their teacher sponsor/adult as they went through the inquiry process. The purpose of this evaluation was to describe a) the barriers and facilitators to implementation of GH, and b) the impact of GH on the students and schools that participated and c) to explore ideas for implementation.

## Methods

### Research design and sample

The research design was descriptive, and utilized qualitative data collected through three focus group discussions with GH student leaders and document review of school reports. This data was analysed to explore program implementation and identify recommendations for future implementation. Lead teachers helped recruit GH school health team representatives to participate in the focus groups. Students were aged 10-18 years and participated after completing informed parental consent and student assent. Ethical approval for this study was obtained from the University of Victoria’s Human Research Ethics Board.

**Intervention:** Supported by funding from The District Health Promoting Schools to cover Teacher on Call (TOC) and training costs, schools also received a \$650 grant from the Directorate of Agencies for School Health in British Columbia (DASH BC) to implement their projects. Eight urban public schools (4 Elementary, 2 Middle, and 2 High Schools) in 1 school district in BC participated in GH, a student-led inquiry youth initiative between November 2011 and May 2012. Each school identified a teacher champion and a team of students to lead the project. Each school was then asked to: a) evaluate the school health environment using a student-friendly assessment tool framed within the CSH model; b) develop inquiry questions; c) based on the outcome of the assessment, devise and implement health promotion activities tailored to the needs of their individual schools.

**Focus groups:** Semi-structured focus groups were used to collect qualitative data. Focus groups were structured to gain depth of understanding on how GH changed the school environment over the course of the year, how student engagement may have been affected and how youth involvement facilitated or inhibited change in the school. Sample questions and probes can be found in Table 1.

Question
Describe what it was like participating in the Got Health activities at your schools?
What were the good things about doing the Got Health project at your school?
What made it hard to do the Got Health project at your school?
What do you think is the best way to get students involved in taking on health issues at your school?

**Table 1:** Sample Focus Group Questions and Probes

School Level	Inquiry Question	Activities	Reported Outcomes
Elementary School	How will providing healthy breakfasts to students improve their overall emotion, physical and academic performance?	<ul style="list-style-type: none"> <li>- Purchased a mobile serving cart to store the food, and received a grant for a new fridge</li> <li>- Students received breakfast</li> <li>- Grade six students taught the younger students to serve and clean up after breakfast.</li> </ul>	<ul style="list-style-type: none"> <li>- Students felt there was less bullying and more working together on the playground.</li> <li>- Teachers noted that some of the more at-risk students were able to pay attention, were not as tired, had improved overall mood, some students improved their grades, acted more positively and improved physical self-care.</li> </ul>
Elementary School	Will students teaching students about healthy food choices improve our schools eating habits?	<ul style="list-style-type: none"> <li>- Students created displays in the school to inform and promote awareness to students about the foods they were eating.</li> <li>- The health team created a signature smoothie including all of the food groups, it was offered to all students in the school combined with a lesson about the food groups, portion sizes and recommended daily intakes based on Canada's food guide.</li> <li>- Students created personalized food guides based on foods they have access to or would be willing to try.</li> <li>- The health team lead the school through a variety of stations geared towards the goal of building awareness around healthy foods.</li> </ul>	<ul style="list-style-type: none"> <li>- Vulnerable academic students were positively influenced by the opportunity to become a leader in the school and the increased confidence was noticed cross-curricular.</li> <li>- The student leaders transferred their leadership skills into other curricular areas</li> <li>- The project increased student awareness on healthy eating, and increased student competencies in all areas of healthy living.</li> </ul>
Elementary School	Will promoting healthy beverages like (water and milk) bring awareness and reduce consumption of other beverages at school?	<ul style="list-style-type: none"> <li>- Local University medical students presented a S.I.P program to intermediate grade students.</li> <li>- Intermediate students presented a modified version of S.I.P program to primary students.</li> <li>- Local Dental Assistant presented at PAC meeting about the importance of oral hygiene.</li> <li>• Developed a recycling program: Students go to a bottle depot twice a month.</li> <li>- Promoted a garbage free day.</li> <li>- Daily, monitoring and tallying of student lunch bags and type of beverage to compare findings at the end of year.</li> </ul>	<ul style="list-style-type: none"> <li>- Students shared that they think high sugar beverages taste better, but became aware that it has no real food value.</li> <li>- Data collection shows that primary and intermediate students improved in beverage consumption</li> <li>- The number of recycling bags per month was reduced 10% during the 6 months of the program.</li> </ul>
Middle School	How will adding variety to the meal program, improve students' health?	<ul style="list-style-type: none"> <li>- Grade 8 students researched different foods and came up with a lunch menu that met all the requirements for school food service.</li> </ul>	<ul style="list-style-type: none"> <li>- Additional options for seating, and greater variety in the lunch offerings</li> <li>- The student body expressed pleasure with the changes.</li> <li>- Vulnerable students experienced a variety of new foods.</li> <li>- Students witnessed their opinions making a change in a school program that is usually not open to them.</li> <li>- Additional seating resulted in students sharing and discussing their lunch choices and socializing more frequently with students from other grades.</li> </ul>

			- School coordinators became more accepting of students' ideas and did not hesitate to incorporate their suggestions.
Middle School	How will students helping to create a fun, healthy eating and free time environment improve the school experience?	- Changes were made to the lunch menu - Gardens, composts, recycling, water harvesting and outdoor school spaces were developed - A healthy school club for students was created	- Policy changed to allow students' music to be played at lunch - The school became part of the Destination Conservation Team - Students volunteered their own time to realize the project goals
Secondary School	- How will the Kick the Nic program benefit or change our schools smoke pit environment?	- Once weekly, the students interested in smoking cessation attended a meeting where they received coffee in the morning, gum for throughout the day and were provided with facts and support to quit smoking - A final session was held with a pizza lunch and gift card giveaway - The students had the chance to learn about smoking cessation and to meet other students also looking for help to quit smoking	- The student leadership team noticed that more socially separate groups were starting to "hang out" with each other, and diversity was becoming less noticed
Secondary School	- By providing students with health based activities that promote belonging we will see a decrease in drug abuse.	- Students were given the opportunity to take part in weekly ZUMBA and Shuffle classes	- Weekly ZUMBA – 10 to 12 participants - Weekly Shuffle – 8-10 participants  - Future plans include a health passport program, offering out of school groups that will allow more students the opportunity to participate in got health activities and implementing a smoking cessation program.
Note: One school did not submit a final report and is not included in this table			

**Table 2:** Summary of School Reports

All sessions were digitally recorded. Parental consent and student assent were obtained prior to the discussion session.

**School reports:** GH school health teams submitted a summary report to the District's Health Promoting Schools Coordinator that outlined their activities and experiences with their respective projects. School reports were reviewed and integrated into the interpretation of focus group data, details of the school reports can be found in Table 2.

**Data analysis:** Focus group data were transcribed verbatim and initially reviewed to generate preliminary coding categories [32]. Data were then transferred into NVIVO 10.0 [33] and a framework analysis approach was used to analyse the data. Framework analysis approach includes four stages of data analysis; familiarization, thematic identification, charting and interpretation [34,35].

## Results

Findings from the focus groups help to elucidate what happened in the schools and students' perceptions of GH in their schools. The scope of perceptions varied widely across schools, by grade level and by student-led initiative. Students identified barriers, facilitators, and perceived outcomes of the GH initiative. Preliminary themes included: failure to connect, I am uncomfortable, lean on me, show me the money, walk with me, school connectedness, now I realize, we matter, and how to make it work. In addition, students also provided suggestions for knowledge translation to neighbouring schools. Findings from the school reports in Table 2 help to give context to the quotes and themes that arose from the focus groups.

## Barriers

Despite the perceived benefits of the project, the health leaders reported barriers to GH's initial success. The themes related to barriers are illustrated by quotes below.

### Theme: Failure to connect

At the outset of GH, project health leaders noticed a disconnect between their awareness of the project and other student's awareness. The lack of awareness was cited as inhibiting the initial success of the program both within the school and among the student body. Health leaders felt detached from the peers that they intended to reach:

At the [beginning the other students] had no clue who we were and they didn't know why we [were out there to play with them]. – elementary school student 1

They (teachers) should have put [GH] on the announcements. – Elementary School Student 2

In particular, one student mentioned a lack of student support at the outset since he was the only member of the GH team at his school initially.

At the beginning it was just me doing it by myself ... and it was really hard to get it going because there [were] lots of kids and I wasn't able to do it by myself. – Elementary School Student 3

Health leaders in a smoking-cessation campaign felt that their teachers were not completely supportive of their involvement in GH due to the fact that the student health leaders themselves were

smokers. Health leaders also perceived that they did not have the support of their peers in the beginning of the program. Not only were other students hesitant to try the school-specific programs due to nerves or capability, as some students suggested, but the health leaders also acknowledged that it was challenging to motivate other students and bring about behaviour change.

It was hard ... to convince people to try something new and something different. – High School Student 1

It's really hard to quit when you're in high school... Nobody wanted to quit [smoking] because of the atmosphere, that's what you do at lunch. – High School Student 2

In a way, for us to just go and quit smoking, all of our friends smoke –so that completely changes everything. – High School Student 3

### **Theme: I Am uncomfortable**

Maintaining student interest and commitment levels proved to be a challenge. Students reported that initially there was difficulty gaining sufficient interest from youth to motivate them to become involved. Several others noticed that their schoolmates were nervous to try new activities (e.g., shuffle dance class) and join new clubs. In the beginning, this challenge was exacerbated by students not knowing many of the other GH participants. Health leaders also recognized that for students to commit to healthy changes and promoting a health initiative could prove difficult due simply to forgetfulness, or from fading enthusiasm among the student body.

### **Facilitators**

The health leaders also reported facilitators to GH's success. The themes related to facilitators are illustrated by quotes below.

### **Theme: Lean on me**

Although health leaders from the high school acknowledged that the social aspect of smoking with peers was a dominant barrier to the success on their "Kick the Nic" campaign they also found that after other students expressed interest in the campaign, and had an alternative to heading outside at recess and lunch to smoke. They recognized that having peer support was essential to their success in smoking cessation.

Maybe not all your friends, maybe one or two ... but then you have one other person that you can walk around with and not go outside and smoke, just have someone there with you as a support network. – High School Student 4

### **Theme: Show me the money**

The partnership between schools and DASH / The District allowed the 8 pilot schools to purchase supplies that facilitated the success of their respective projects. As a result of the grant, health leaders were able to provide items (e.g. equipment, healthy food) that were not available to them beforehand. At one school, prior to the grant, barriers to active play during recess/lunch was cited as largely to do with a lack of playground equipment. After the grant was received the teacher was able to purchase equipment for children to play with.

At the starting (sic) we didn't have very many things to play with the kids but now we have like 3 rubbermaids full because our teacher went

out and bought stuff and now the kids really like it. - Elementary School Student 4

We used our money [to buy] all the supplies. Because there wasn't that much supplies so there was a ton of kids like standing around (sic). So now that we've bought more of the supplies more of the kids are playing with it and they're more active now. - Elementary School Student 5

Another school used their grant funds to develop a rewards-based initiative, where students were given a t-shirt after attending 5 dance classes. Health leaders reported that the t-shirts encouraged other students to come out to the afterschool dance classes, which was perceived to raise healthy living awareness [school report].

### **Theme: Walk with me**

There was an overwhelming consensus among students that the success of GH was the result of initiatives being student-led. In partnership with teachers, students led all aspects of the initiative, from the initial needs assessment through to the development and implementation of school projects. Rather than parents or teachers driving GH, health leaders perceived that students were more invested in their respective school projects, and thus, contributed to its success. One student explained:

Students just feel more comfortable talking to other students instead because some students just don't trust the teachers very much. You trust your friends and peers more. – Elementary School Student 5

Health leaders took on the role of leading the health promotion dialogue at their schools, and as a result students were receptive to the health projects. Furthermore, they were understanding of the hard work and dedication that their student health leaders were putting in for their mutual benefit. Specifically, one health leader explained that having personable and invested student leaders allowed other students be more open-minded towards the project and towards learning about the health benefits they might receive from participating in GH.

By speaking with their fellow students, health leaders were able to successfully implement healthy school policies, such as encouraging students to bring healthy beverages instead of sugar-sweetened beverages, or removing unhealthy options from the cafeteria and replacing them with student-suggested healthy options, without it feeling forced upon the student-body.

We found that in our program if we put on the lunch menu what the students wanted they'd be more into the food. Like healthy food. – Middle School Student 1

### **Outcomes of GH**

Focus groups also identified three major themes as outcomes of GH: school connectedness, health awareness, and learning about student engagement.

### **Theme: School connectedness**

Many of the health leaders reported that they witnessed and/or experienced greater connections being made among students and more relationships developed over the course of the year-long project. For example, one elementary student explained that after the student health project was implemented "there [was] kind of a ... connectedness in the whole school [which was] nice." Similarly, students cited that the clubs held at one of the high schools were

successful at bringing students together, stimulating conversation, and engaging students with others that they would not normally associate with under a typical high school daily routine, particularly spanning across grades (High School Student 5).

### **Theme: Now i realize**

Student leaders recognized their increased health awareness, and acknowledged changes in their behaviour throughout the course of the program. There was a sub-theme of awareness to individual health that was noted and mentioned repeatedly throughout the focus groups. Students recognized that the health project was in place to encourage healthier behaviours that may, in turn, foster longer and healthier lives. Students identified the importance of promoting healthy eating habits at a younger age as a method for disease prevention and that modifying one's eating habits could result in physical changes that may also be perceived by others.

It kind of like made me realize like how I should be eating healthier to like avoid problems and like it just kind of gave me an understanding of what I should like be thinking of when I'm eating food – Elementary School Student 7

Students promoting the smoking cessation initiative similarly reported knowing someone who quit smoking by the end of the initiative. While not all students involved in the program changed their smoking habits, one student declared it a success because “even if people didn't quit, they still got the information that they needed” (High school student) for a smoke-free future.

### **Theme: How to make it work**

Students recognized that peer-to-peer was an effective means of involving students in health promotion activities. When many of their fellow students were interested in the health project, students reported becoming more engaged because it was perceived as “cool” to be involved.

Um I thought it was cool because in our school I think the kids thought it was cool 'cause of student leaders instead of parent leaders and I think they got more connected to the leaders instead of just being like let's just do it and leave, instead they got more connected with the people who were doing it and understood more what we were doing for them. – Elementary School Student 8

Incentives also worked. Students at one of the participating high schools noted that their school used a reward system where participants received a t-shirt after attending 5 shuffle dance classes. This method was seen as successful since it brought attention to the initiative and was perceived to motivate other students to try out the health activity. Similarly, one student from a participating high school also recognized the importance of a reward-based system for student participation. He identified the GH year-end celebration, held at the educational services centre, as a reward for students having “put in a good effort and [been] selected to come...and represent [their] school” (High school student).

At the individual school level, students from one school noted that their social justice league health council was successful in stimulating conversations about health among youth. Another student identified inter-school gatherings as a potential way to exchange knowledge of one's health initiative with others. For example, The District held a GH celebration day to acknowledge the accomplishments of the health teams and the hard work done by the students. The celebration day was

recognized as a good way to get youth talking to one-another about their respective health initiatives. Other suggestions included group gatherings that would encourage youth to meet other youth from neighbouring schools, and engage in activities with students and adults alike.

Specific recommendations to improve GH or other similar student-led inquiry school health initiatives emerged and included the following:

- Increasing student awareness of the health initiative by personally introducing student health leaders to the school.
- Increasing student motivation and commitment through small tokens of appreciation and celebration days to reward participation.
- Forming student health councils at each school to encourage discussion of healthy living initiatives among students.
- Continuing to host a celebration day where all participating schools can attend and exchange information on their respective initiatives.
- Providing youth the opportunity to exchange health ideas, and maintain interest levels by hosting celebration days for neighbouring schools at 3-month intervals throughout the school year.
- Encouraging promotion of health initiatives to other schools in the district through student-led presentations (e.g., oral or video presentation).
- Including more integration and engagement across grade levels by providing younger students with minor roles and responsibility in the health initiative.

## **Discussion**

We examined the impact of the Got Health? inquiry project through the feedback from student leaders engaged in the initiative at their school. GH was initiated based on literature that demonstrated the benefits of engaging youth in health promotion [9,22-26] and peer-led health projects [8,27-29]. Students led 8 health projects ranging from breakfast programs to smoking cessation initiatives. Mirroring some of the benefits found in the literature, the GH Initiative increased connectedness [8,19], improved health awareness [29,36], and facilitated student engagement [26]. The literature suggest that strong communication between the student leaders and the students [37] and respect for student-initiated ideas from the adults facilitated other student-led initiatives [25] and that competition for time and resources in a school environment, and a focus on subject matter excellence challenged them [25]. We discuss these findings in light of the literature following.

By the nature of the GH initiative's design, student teams became groups of peers that formed relationships with each other, with the mentor teachers and adults involved in working with them, and with their school community. A key benefit (cited as an asset in the youth literature [8,19]) was school connectedness from participation in this process. This supports the work of Cargo et al. in that participation, which is meaningful to youth, can contribute to more sustained and prolonged engagement which is necessary for skill development and mastery and positive youth identity development [38]. Many student leaders reported that they experienced greater connections and built more relationships than they previously had, which aids in empowering students [25].

Our results showed that GH student leaders were engaged and recognized the importance of this engagement. They also became more aware of health issues providing evidence of empowerment. This finding is consistent with the literature that shows that student engagement is a critical part of effective health promotion interventions [22] and that student participation can result in increased awareness surrounding health issues [25,36]. Engaged and empowered youth can generate an environment where the common goal is the health of all the members of the school community [39] and by empowering youth with opportunities for participating in the decisions that affect them it increases their overall well-being in the process [40]. When young people are involved in producing knowledge that impacts policy and action in their communities it can increase their sense of responsibility to others fulfilling developmental needs in a healthful way while also enhancing the applicability of research, policy, and practice to reflect the experiences of the involved children and adolescents [9]. Some research shows that not involving youth in decision-making opportunities can be detrimental. Perceived powerlessness and dependence on the part of students can increase the risk of disease and poor health outcomes [17], which is why developing effective student-led inquiry health initiatives based on empowerment and engagement such as GH are so important for the health of future generations.

A major strength of GH was the creation of new connections and building of relationships within the school community. This was facilitated by the themes: lean on me, show me the money, and walk with me, as well as funding, and support. This finding is consistent with the literature that shows that student participation in health promotion can improve peer and student-adult relationships [26]. Unfortunately there is little evidence regarding facilitators in other student-led health promotion initiatives, but it has been suggested that continuing information, support, and professional development could help both students and teachers to facilitate the administrative, cultural, and attitudinal shifts necessary for successful implementation of these initiatives [26].

Major challenges, on the other hand, included a lack of student awareness at the outset of the initiative, and the fading of student enthusiasm over the course of the school year. Future student-led initiatives need to take these issues into account. We found little discussion of barriers to implementation in the literature to date, similar to two systematic reviews that suggest a paucity of evidence on process and outcomes of student-led health interventions [36,41].

We acknowledge the fact that the study was not without limitation. Limitations include a potential lack of representativeness from all participating schools due to the combination of student leaders into 3 large focus groups; some students may not have contributed as much as others. In addition the larger number of participants in the focus groups may have stifled potential input from some participants. Finally although we used an inquiry process to engage students in health promotion we didn't specifically explore that process in the evaluation. However, despite these limitations, the findings for the GH pilot study may be useful for future student-led inquiry projects and encourage further research into this promising avenue of youth health promotion.

## Conclusion

Student engagement and school connection are positive assets for youth health. Our results suggest that student-led health promotion projects can make a positive contribution to both. Future research

should implement more randomized comparison trials that include implementation information and process evaluation to move the field forward.

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